New Combinations in Mimosaceae

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ABSTRACT. Three new combinations, one in *Abarema* and two in *Albizia* (tribe Ingeae of the Mimosaceae), are proposed based on the study of fertile material from Central and South America. Two of these are necessary for the completion of the Mimosaceae treatment for *Flora de Nicaragua.*

In the course of preparing treatments for genera of the tribe Ingeae for the *Flora de Nicaragua*, it has been necessary to propose new combinations in the Mimosaceae. In the past 20 years, large parts of neotropical *Pithecellobium* and *Albizia* have been divided into several small genera; this fragmentation has not yet been generally accepted by foresters, agronomists, and parataxonomists. Nielsen (1981) reviewed the genera in the tribe Ingeae and stated that, historically, classification of the group has been based largely on fruit characters, leading in many cases to "pod-genera" (Nielsen, 1981: 173). Most genera were difficult to separate when only in flower, so he proposed a classification for the whole tribe (covering 20 genera), based on vegetative, floral, and carpological characters. Barneby and Grimes (1996) established a framework of seven generic alliances (containing a total of 20 genera) for mainly neotropical taxa of tribe Ingeae. A few cultivated Old World species of *Albizia* were included. Barneby and Grimes's (1996) classification was based largely on growth and branching patterns, as well as on developmental characters of vegetative and floral buds.

The first species under consideration in the present paper falls within the *Abarema* alliance of Barneby and Grimes (1996). *Abarema* contains approximately 45 species, with inflorescence, fruit, and seed characters being consistent within the genus. The species was first described as *Pithecellobium* ("*Pithecolobium*") *acreanum* Macbride (1943), but was tentatively transferred to the genus *Hydrochorea* by Barneby and Grimes (1996: 33) as "*Hydrochorea* (?) *acreana* (Macbride) Barneby & Grimes." The genus *Hydrochorea* Barneby & Grimes is mainly characterized by a lomentaceous fruit. *Hydrochorea acreana* was known to Barneby and Grimes by only two flowering specimens from the Brazilian state of Acre, and they commented (1996: 34) that "pending discovery of the fruit, its affinity cannot be assessed with finality." They went on to state, "The foliage, except for smaller petiolar nectaries, is more reminiscent of *Abarema adenophora.*"

Robleto 678 (from Nicaragua) and *Herrera 7008*, *Rivera 2350*, and *Zumbado 98* (all from Costa Rica) are fruiting specimens that all possess leaflets and relatively small petiolar nectaries that closely match those of *Pithecellobium acreanum.* Together these four collections represent two disjunct distributions of the species under discussion here.

Zumbado 98 was cited by Barneby and Grimes in their exsiccatae (1996: 283) as *Abarema macradenia* (Pittier) Barneby & Grimes, another disjunct species (Central and South America; Barneby & Grimes, 1996: 59). However, *A. macradenia* has a thick coriaceous fruit and obliquely oblong-elliptic or very obtusely rhombic leaflets, and the duplicate specimen of *Zumbado 98* at K lacks these characteristics.

Robleto 678 (BM) from Nicaragua was not cited in the Barneby and Grimes (1996) exsiccatae, but was given by them as the basis of *Abarema ricoae* Barneby & Grimes, nom. provis (1996: 110).

In their discussion under this species Barneby and Grimes stated, "In foliage the described specimen closely resembles *Balizia acreana*, and was so identified in 1988 by L. Rico (BM)." In clarification, this specimen was not identified as *Balizia acreana* but as *Abarema acreana* (Macbride) L. Rico, ined. The genus *Balizia* Barneby & Grimes was not described until 1996. Barneby and Grimes's statement that *Robleto 678* closely resembles *Balizia acreana* is an error. Presumably, the reference is to *Hydrochorea acreana.* A key difference between their provisional species *Abarema ricoae* and *Hydrochorea acreana* is peduncle length. Peduncle length of *Balizia acreana* (= *Hydrochorea acreana*) is cited as 2.5 cm (Barneby & Grimes, 1996: 110) but is elsewhere mentioned as 20–33 mm (1996: 34). Peduncle length for *Abarema ricoae* is given as ±11 cm in the description but only 11 cm in the discussion. Careful measurement of the K isotype of *Pithecellobium acreanum* (*Krukoff 5631*, a flowering specimen) re-

veals peduncles of up to 3.5 cm long. *Zumbado 98* (K), a specimen in fruit, has a peduncle about 7 cm long, and *Rivera 2350* (K), also in fruit, has a peduncle 9.5 cm long. Evidently the assumption (Barneby & Grimes, 1996: 110) that "peduncles and pedicels of other abaremas do not elongate appreciably after anthesis" is not supported. *Abarema ricoae* (as represented by *Robleto 678*) is at the upper end of peduncle length range for *Pithecellobium acreanum* (= *H. acreana*).

Also noteworthy is the fact that *Hydrochorea acreana* closely resembles *Abarema adenophora* (Ducke) Barneby & Grimes, and the two ultimately may prove to be conspecific after more fieldwork has been done. In this case, *Abarema adenophora* would have priority.

What is clear is that *Hydrochorea* (?) *acreana* is in fact an *Abarema*, and *Abarema ricoae* Barneby & Grimes nom. provis. is conspecific. The necessary combination is proposed below.

Abarema acreana (Macbride) L. Rico, comb. nov.
Basionym: *Pithecellobium* ("*Pithecolobium*") *acreanum* Macbride, Publ. Field Mus. Nat. Hist. Bot. Ser. 13(3.1): 51. 1943. *Hydrochorea* (?) *acreana* (Macbride) Barneby & Grimes, Mem. New York Bot. Gard. 74(1): 33. 1996. TYPE: Brazil. Rio Acre: on terra firma, mouth of Rio Macauhán, 24 Aug. 1933, *Krukoff 5631* (holotype, F not seen; isotype, K).

The second species under discussion in this paper was first described in 1825 as *Inga pedicellaris* DC. and has subsequently had a complicated nomenclatural history, with the epithet being transferred by Bentham in 1844 to *Pithecellobium*, by Kuntze in 1891 to *Feuillea*, by Killip ex Record in 1940 to *Samanea*, by Kleinhoonte in 1940 to *Macrosamanea*, and most recently by Barneby and Grimes in 1996 to *Balizia*. It has also been described by Vellozo in 1829 as *Mimosa terminalis*.

Balizia pedicellaris (DC.) Barneby & Grimes falls within section *Balizia* of Barneby and Grimes's small genus *Balizia* and is very closely related to (perhaps even conspecific with) *B. elegans* (Ducke) Barneby & Grimes, the only other species in section *Balizia*. The third species of *Balizia*, *B. leucocalyx* (Britton & Rose) Barneby & Grimes, was accommodated in the monotypic section *Leucosamanea* (Barneby & Grimes, 1996: 36), and they included the combination *Albizia leucocalyx* (Barneby & Grimes) L. Rico (1992) in synonymy.

In their key to the three species of *Balizia*, Barneby and Grimes (1996: 35) separated *B. pedicellaris* from *B. elegans* by calyx and corolla lengths (both longer in *B. elegans*) and by the distance between the transverse fibers of the pod mesocarp (greater in *B. elegans*). They stated that *B. pedicellaris* is widespread in South America, while *B. elegans* has a bicentric distribution in lower Amazonian Brazil and southeastern Central America (Nicaragua, Costa Rica). Zamora (1991: 132), in his treatment of the Mimosaceae for Costa Rica, gave calyx and corolla measurements for *Pithecellobium elegans* Ducke that confirm the Costa Rican material is best placed in this species. However, my measurements of all material from Nicaragua fall exactly within those of *B. pedicellaris*, and I conclude that the Nicaraguan specimens are better placed in that taxon.

When considering the genus *Albizia*, Barneby and Grimes (1996) dealt with Old World species only when they had been introduced into the Americas. This leaves an inconsistency in that several neotropical *Albizia* species have been placed in segregate genera (e.g., *Hesperalbizia*, *Pseudosamanea*, *Blanchetiodendron*) by Barneby and Grimes (1996), but most of the paleotropical species have not been dealt with. *Albizia*, when considered pantropically, remains a genus with a great diversity of floral and fruiting morphological characters. In this context, *Balizia pedicellaris* and *B. elegans* are comfortably accommodated in *Albizia* by their whitish seeds (characteristic of other *Albizia* species) and inflorescences that are similar to some Malesian species, e.g., *A. dolichadena* (Kostermans) Nielsen and *A. rosulata* (Kostermans) Nielsen. These latter two species also have fruits not dissimilar to those of *Balizia*, i.e., indehiscent or tardily dehiscent, cracking between the seeds but not through the sutures. The main fruit difference between those of *Balizia* and these two Asian taxa is that the Asian species have coiled fruits. On balance it seems wiser to adopt a broader concept of *Albizia* until the genus has been monographed across its pantropical range.

Balizia leucocalyx has already been recognized as an *Albizia* (Rico, 1992). Based on the above argument, *B. pedicellaris* and *B. elegans* are below transferred into *Albizia*, thus effectively placing the entire genus *Balizia* as a synonym of *Albizia*.

Albizia pedicellaris (DC.) L. Rico, comb. nov.
Basionym: *Inga pedicellaris* DC., Prod. 2: 441. 1825. *Pithecellobium* ("*Pithecolobium*") *pedicellare* (DC.) Bentham, in Hooker, London J. Bot. 3: 219. 1844. *Feuillea pedicellaris* (DC.) O. Kuntze, Rev. Gen. Pl. 1: 88. 1891. *Samanea pedicellaris* (DC.) Killip ex Record, Trop. Woods 63: 4. 1940. *Macrosamanea pedicellaris* (DC.) Kleinhoonte, in Pulle, Fl. Suriname 2 (2): 329. 1940. *Balizia pedicellaris* (DC.) Barneby & Grimes, Mem. New York Bot. Gard. 74(1): 37. 1996. TYPE: Cayenne (G-DC.).

Mimosa terminalis Vellozo, Fl. Flum. 11: t. 30. 1829. TYPE: "Habitat silvis maritimis."

Albizia elegans (Ducke) L. Rico, comb. nov. Basionym: *Pithecolobium elegans* Ducke, Arch. Jard. Bot. Rio Janeiro 3: 64. 1922. *Balizia elegans* (Ducke) Barneby & Grimes, Mem. New York Bot. Gard. 74(1): 40. 1996. TYPE: Brazil. Para: "Alcobaça prope fl. Tocantins," 17 July 1916, *Ducke 16271* (lectotype, designated by Barneby & Grimes (1996: 40), MG not seen; isolectotypes, BM, G, K, P, US not seen).

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